

## REMARKS

Claims 64-68, 70-80, 83-92, 94, and 95 are pending. Claims 64 and 95 are amended herein. No new matter has been added by virtue of the amendments, support therefore being found throughout the originally filed claims and specification (e.g. see page 8, lines 25-27; Figs. 1(a-b); page 13, lines 7-13 and 21-25; page 15, lines 24-28).

With respect to the statement in the Advisory Action, that “the amendment raises the issue of new matter”, Applicants respectfully disagree. Applicants provide additional citations for support above. For example, at page 13, lines 21-25 it is set out with respect to the non-adhesive agent (i.e. surfactant) that:

\* \* \* the **non-adhesive agent is then allowed to adsorb onto the surface** to block areas not printed with protein 24, see also Figure 1(B). Because the **hydrophobic core of the nonadhesive agent is responsible for its stable adsorption onto the surface**, it is unable to adsorb to the protein-adsorbed, hydrophilic areas.  
(Emphasis added)

At page 15, lines 24-28, it is further set out that:

By exposing a masked **hydrophobic surface** (e.g., bacteriological polystyrene petri dish) to a plasma etcher, the plasma reacts to the unmasked regions, rendering these regions hydrophilic. The **surfactant then adsorbs only to the originally masked, hydrophobic regions**.  
(Emphasis added)

In view thereof, Applicants respectfully submit that no new matter has been added by virtue of the amendments.

### 1. 35. U.S.C. §103 Rejections

Claims 64-68, 70-80, and 83-92, 94, and 95 are rejected under 35 U.S.C. §103(a) over Singhvi et al (6,368,838 B1) in view of Dewez et al (WO 96/15223) and Anderson et al (6,686,184 B1).

Applicants respectfully traverse.

Applicants' amended claim 64 recites a device for adhering a biomolecule in a predetermined position comprising a substrate comprising a polymeric surface and having thereon a plurality of cytophilic regions that can adhere a biomolecule and cytophobic regions to which the biomolecules do not adhere, wherein the cytophobic regions are contiguous with the cytophilic regions. The cytophobic regions are formed of one or more surfactant compounds adsorbed directly on the polymeric surface. The device further comprises microfluidic channels on the polymeric surface.

Applicants' amended claim 95 recites a device for adhering a biomolecule in a predetermined position comprising a substrate comprising a polymeric surface and having thereon a plurality of cytophilic regions that can adhere a biomolecule and cytophobic regions to which the biomolecules do not adhere, wherein cytophobic regions are contiguous with the cytophilic regions, wherein the cytophobic regions are formed of one or more surfactant compounds adsorbed directly on the polymeric surface, wherein the surfactant compound is not covalently linked to the substrate.

The Office asserts that it “would have been obvious to provide the cytophobic regions of Singhvi et al with a surfactant to inhibit binding of extracellular matrix protein to these regions as suggested by Dewez et al” (Office action, page 3, lines 13-16). The Office further notes that “the claims do not exclude a self-assembled monolayer (SAM) on the surface” and that “it would have been obvious to absorb a surfactant on a cytophobic SAM” (Office action, page 4, lines 12-13 and 19-20).

Applicants respectfully submit that Singhvi at least fails to teach or suggest cytophobic regions formed of one or more surfactant compounds adsorbed directly on the polymeric surface and microfluidic channels on the polymeric surface. Rather, Singhvi describes a plate having cytophilic and cytophobic regions thereon created by SAMs. Singhvi does not disclose or suggest the use of surfactants to create cytophobic regions.

Dewez does not remedy these deficiencies. There is no teaching or suggestion to modify Singhvi so as to replace the SAMs specifically described therein with a surfactant. Further Dewez specifically describes a **heterogenous surface** conditioned with surfactant. According to Dewez, a “heterogeneous surface means a polymeric support having surface modified areas and non modified areas\* \* \* said surface modified areas show a different hydrophobicity compared to the non modified surface areas” (page 3, lines 20-29). According to Dewez, the surface is pre-treated with plasma discharge. Thereafter, the plasma modified surface is provided with cytophobic and cytophilic regions. (page 6, lines 14-25). Thus, like Singhvi, Dewez does not teach or suggest cytophobic regions formed of one or more surfactant compounds adsorbed directly on the polymeric surface.

Further, Anderson does not remedy these deficiencies in Singhvi and Dewez. Anderson is cited in connection with patterning surfaces using a stamp containing microfluidic channels.

Thus, Applicants respectfully submit that Singhvi, Dewez, and Anderson at least fails to teach or suggest a substrate comprising a polymeric surface and having thereon a plurality of cytophilic regions, the cytophobic regions formed of one or more surfactant compounds adsorbed directly on the polymeric surface, and microfluidic channels on the polymeric surface.

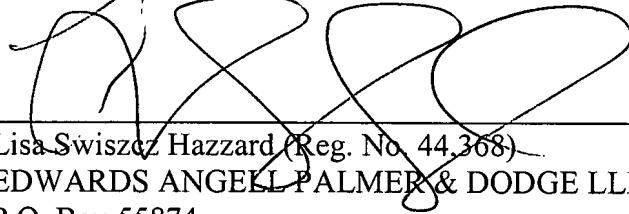
Accordingly, it is respectfully submitted that claims 64 and 95 are patentable over Singhvi, Dewez, and Anderson. Claims 65-68, 70-80, 83-92, and 94 depend from claims 64 and 95 and, likewise, are patentable over Singhvi, Dewez, and Anderson. Reconsideration and withdrawal of the rejection is respectfully requested.

## CONCLUSION

In view of the foregoing, applicants request reconsideration and allowance of claims 64-68, 70-80, 83-92, 94 and 95.

It is believed that no fees are required for consideration of this response. However, if for any reason the fee paid is inadequate or credit is owed for any excess fee paid, the Office is hereby authorized and requested to charge Deposit Account No. **04-1105**.

Respectfully submitted,



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Date: May 1, 2007

Customer No. 21,874



Application No. (if known): 09/904,200

Attorney Docket No.: 56253 (71699)

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